

## *Asplenium ofeliae* (Aspleniaceae), a New Species from Luzon, Philippines

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ABSTRACT.—A new species of *Asplenium* is described from the middle and high altitude mountains of northern Luzon, Philippines. This new species, *Asplenium ofeliae*, is related to *A. unilaterale* Lam. and is endemic to the Philippines.

The Philippine archipelago lies entirely within the tropics and belongs to the phytogeographic region known as Malesia. The archipelago consists of about 7,107 islands, islets and reefs scattered over 1,295,000 Km<sup>2</sup> of the western Pacific Ocean (Tan & Rojo, 1989). The Philippine fern flora is rich and well known, although only one comprehensive fern flora has ever been published (Copeland, 1958–1960). Thirty-one families, 151 genera, and 958 species were reported in the last published checklist (Salgado, 1990). Since that publication, new species, new records for the country, and other record changes have been published (Barcelona *et al.* 1996; Salgado, 1996; Hovenkamp, 1998; Nootboom, 1998; Barcelona and Price, 1999). By the time a new fern flora can be prepared, the final number of fern species will probably approach 1,000.

The genus *Asplenium* is represented in the Philippines by at least 43 species (Salgado, 1990). While studying Philippine *Asplenium* in greater depth since the publication of the checklist, it became obvious that this number of species is too low. Some species are in reality groups of species, and others have been erroneously reduced to synonymy. Several names have been traditionally used in the Philippines and other parts of Asia to designate these species groups (see Tardieu-Blot and Ching, 1936; Holttum, 1955). In revising the Philippine species of *Asplenium* sect. *Hymenasplenium*, I found specimens in K, L, PRC and US that had been identified as *Asplenium unilaterale* Lam., but actually represented a new species.

The type of *Asplenium unilaterale* was collected by P. Commerson in Mauritius. It is a common, widespread species reported from Africa to Polynesia (Christensen, 1943; Copeland, 1960; Burrows, 1990). This variable species is commonly found in humid ground, among rocks, and on ravine embankments. In the Philippines it grows from about 150 to 2500 m. *Asplenium unilaterale* is recognized by its dorsiventral, creeping rhizome, pinnate frond, oblong lamina, the basiscopic side of the pinnae with a very narrow lamina  $\frac{1}{3}$  to  $\frac{1}{2}$  the length of the pinna the margin gradually expanding then tapering toward the apex, the pinna apex acute or narrowly rounded, the acroscopic pinna margin dentate or crenate (Fig. 1. C), and the oblong sori oblique to the costa occupying the base or center of the veins



FIG. 1. A. *Asplenium ofeliae*: Abaxial side of pinnae showing the acroscopic margin with deep and shallow sinuses, and the straight, basiscopic margin with the subapical tooth (Merrill Phil. Plts. 700, US). B. *Asplenium ofeliae*: Lobe bearing two teeth, each tooth has a veinlet ending in a notch (Merrill Phil. Plts. 700, US). C. *Asplenium unilaterale*: Abaxial side of laminae showing a dentate acroscopic margin and the expanded lamina below the costa (Ramos & Edaño BS37952, US). D. *Asplenium unilaterale*: Abaxial side of pinna showing the irregularly crenate acroscopic margin (C. A. Wenzel 547, US). T = subapical tooth; D = deep sinus; S = shallow sinus; N = notch.

(Fig. 1. D). Iwatsuki (1975) grouped *A. unilaterale* and its allied species *A. excisum* C. Presl, *A. subnormale* Copel., *A. filipes* Copel. (syn. *A. unilaterale* var. *udum* C. B. Clarke), and *A. cheilosorum* Kunze in section *Hymenasplenium*, which is characterized by their dorsiventral, long-creeping rhizome, phyllopodia or swollen stipe bases, a characteristic anatomy of the meristemes and a unique chromosome number ( $x = 39$ ) within *Asplenium* (Lovis, 1973; Mitui *et al.*, 1989).

*Asplenium ofeliae* Salgado, *sp. nov.*—TYPE: Philippines: Benguet, Luzon, May 1911, *Merrill Phil. Plts.* 700 (holotype US!; isotype PRC!).

*Asplenio unilateralis* Lam. affine. Stipites atropurpurei hirsuti, pilis stramineis coarctatis; laminae oblongae; pinnae sessiles dimidiatae, margine basiscopica distaliter dente subapicala munita, margine acroscopica lobata propter sinus profundos et denticulata propter incisuras non profundas, incisuris et sinibus alternantibus, venis gracilibus non prominentibus ad basin incisurarum conjunctis.

Rhizomes short-creeping, ca. 3 mm in diameter, with small phyllopodia, densely covered with stramineous hairs, scales few, black, clathrate, entire. Fronds alternating on the dorsal side of the rhizome, ca. 0.5 cm distant, (11)15–20(22) cm long and (1.9)2.2–3.1(3.4) cm wide, pinnate; stipes (4)5–9(10) cm long, terete, atropurpureous, polished, profusely hairy near the base, the hairs long, yellow, multiseriate, becoming shorter distally, often forming a mat on the surface of the stipe; laminae longer than the stipes, (9)10–14(16) cm long, oblong, acuminate, thin, truncate at the base; rachises shallowly grooved, marginate to the lower pinnae with a chlorophyllous, narrow wing, glabrescent or hairy, hairs stramineous and multiseriate; pinna pairs 16–25, subopposite to alternating, the basal pinna pair as long as the median pairs, median pinnae (1.0)2–3(3.4) cm long, 0.5–0.7 cm wide, sessile or short stalked with a decurrent narrow wing on the acroscopic side of the stalk, oblong, with a broadly rounded, dentate apex, the acroscopic pinna base at a right angle to the costa or broadly cuneate, the basiscopic margin almost completely excised, less than 1 mm wide for half or more the length of pinna, straight, ending in a horizontal, subapical tooth (Fig. 1. A), acroscopic pinna margin with lobes formed by deep incisions between the secondary veins,  $\frac{1}{3}$  to  $\frac{1}{2}$  to the costa, forming marginal teeth, teeth rounded, with an apical notch, apex pinnatifid with a thin wing along the rachis; veins free, visible, thin, costa straight for about  $\frac{2}{3}$  of the length of the pinnae then turning towards the acroscopic margin, acroscopic secondary veins separated by the deep marginal incisions, not forked or dividing only once, each vein or venule produced at the fork extending into a rounded marginal tooth and reaching the apical notch, two or three basiscopic veins present, the first basiscopic vein paralleling the margin and ending in the subapical tooth; sori 3–5 mm long, distal on the pinnae, mostly in an oblique row on the acroscopic side of the costa and close to it, never reaching the base of the teeth, 0–2 sori on the basiscopic side of the costa and usually parallel to the margin; indusia thin, yellowish or brown, entire.

I have selected the epithet *ofeliae* in honor of Ofelia Braña-Salgado, my mother, a lover and grower of ferns.

DISTRIBUTION.—Endemic to the mountains of north-central Luzon, Philippines.

PARATYPES.—PHILIPPINES. LUZON: **Benguet:** Monte Tonglon(= Mt. Santo Tomas), 2250 m, northern Luzon, Mar. 1897, *Loher 1245* (US!); Haight's Place, Jan 22–28, 1909, *Topping 1132* (US!); Pauai, Jan 23–28, 1909, a second *Topping*

1132 (US!); Mt. Santo Tomas, Feb 2,3, 1909, *Topping 1188* (US!). **Ifugao:** Mt. Data, Sept. 1921, *Ramos & Edaño BS40257* (US!, K!); Mt. Data, May 3, 1946, *Alcasid PNH 1748* (L!).

*Asplenium ofeliae* has been collected very few times since the end of the nineteenth century. It is distinguished from *A. unilaterale* and its allied species by hairy stipes and rachises, oblong pinnae with a broadly rounded, toothed apices, by the straight basisopic pinna margin, ending in a horizontal, subapical tooth (Fig. 1. A), by its incised upper margin with alternating deep incisions separating the secondary veins, and shallow incision separating venules and the rounded teeth with a marginal notch at the tip (Fig. 1. B).

*Asplenium ofeliae* is a terrestrial fern found between 1200–2300 m in the central highlands of northern Luzon, Philippines. These mountains receive heavy rainfall during the monsoon and typhoon season from May to November. There is a period of drought from about December to April. In the Philippines, mountain summits above 1500 m are naturally covered with mossy or cloud forests often shrouded in clouds and mist for several hours every day. Humidity is normally high at these elevations. The herbarium specimens from which the species has been described do not include ecological notes or descriptions of the locations where they were collected. *Asplenium ofeliae* may be saxicolous like two of its close relatives, *A. unilaterale* and *A. subnormale*, but its habitat has not been established with certainty.

#### ACKNOWLEDGEMENTS

I am indebted to David Lellinger of the U. S. National Herbarium, Smithsonian Institution, for his helpful comments, and to Peter Edwards, Royal Botanic Gardens, Kew, England, for his assistance during my visit to the herbarium.

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